From: Bucholtz, Paul (DEQ)
To: Saric, James
Subject: FW: Items for conference call
Date: Friday, January 10, 2014 1:11:58 PM
Attachments: 2013 1 08 Area 1 Tables 1-2 SMB fillet.pdf
2014 01 08 Area 1 Fish Projection Methodology for Call on 1-8-14.docx
2014 01 08 A1 SMB_Fillet_graphs.pdf

FYI

From: Draper, Cynthia E [mailto:Cynthia.Draper@amec.com]
Sent: Wednesday, January 08, 2014 2:55 PM
To: jkern@kernstat.com
Subject: FW: Items for conference call

For our call today at 3:00 central.

From: Sheffield, Nathan
Sent: Wednesday, January 08, 2014 3:49 PM
To: Prytula, Mark T; Curtis, Emmet F; Draper, Cynthia E
Cc: Smith, Laura M
Subject: Items for conference call

Per your request

Nathan Sheffield
Technical Professional I
Environment and Infrastructure
1075 Big Shanty Road NW
Suite 100
Kennesaw, GA 30144

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********************** ATTACHMENT NOT DELIVERED  ********************

This Email message contained an attachment named
  image001.jpg
which may be a computer program. This attached computer program could
contain a computer virus which could cause harm to EPA's computers,
network, and data.  The attachment has been deleted.

This was done to limit the distribution of computer viruses introduced
into the EPA network.  EPA is deleting all computer program attachments
sent from the Internet into the agency via Email.

If the message sender is known and the attachment was legitimate, you
should contact the sender and request that they rename the file name
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extension and resend the Email with the renamed attachment. After receiving the revised Email, containing the renamed attachment, you can rename the file extension to its correct name.

For further information, please contact the EPA Call Center at (866) 411-4EPA (4372). The TDD number is (866) 489-4900.

********** ATTACHMENT NOT DELIVERED **********

Table 1. Smallmouth Bass Fillet Equations

S-2 (Includes Urban and Dam)						
	Urban Area			Dams Area		
	Upper Bound	Mid	Lower Bound	Upper Bound	Mid	Lower Bound
MNR	0%	Urban 2	ABSA-03 UCL	ABSA-05 LCL	ABSA-05	Dams UCL
Recovery	0%	Urban 2	ABSA-03 UCL	ABSA-05 LCL	ABSA-05	Dams UCL

Notes:
SWAC Area 1 Wide

S-3 (Includes Urban Only)						
	Upper Bound	Mid	Lower Bound	Upper Bound	Mid	Lower Bound
2 Year MNR	0%	Urban 2	ABSA-03 UCL	--	--	--
2 Year Step Down (BSAF)	0.1	0.444	LogLinear	--	--	--
Recovery	Urban 2	(power)	ABSA-03 UCL	--	--	--

Notes:
Using SWAC Area 1 (Sections 2,3,4 only)
-- Not calculated

S-4 (Includes Urban Only)						
	Upper Bound	Mid	Lower Bound	Upper Bound	Mid	Lower Bound
2 Year MNR	0%	Urban 2	ABSA-03 UCL	--	--	--
4 Year Step Down (BSAF)	0.1	0.444	LogLinear	--	--	--
Recovery	Urban 2	(power)	ABSA-03 UCL	--	--	--

Notes:
Using SWAC Area 1 (Sections 2,3,4 and 3 along the edge)
-- Not calculated

S-5 (Includes Urban and Dam)						
	Upper Bound	Mid	Lower Bound	Upper Bound	Mid	Lower Bound
2 Year MNR	0%	Urban 2	ABSA-03 UCL	ABSA-05 LCL	ABSA-05	Dams UCL
10 Year Step Down (BSAF)	0.1	0.444	LogLinear	0.1	0.444	LogLinear
Recovery	Urban 2	(power)	ABSA-03 UCL	ABSA-05	(power)	Dams UCL

Notes:
SWAC Area 1 Wide

Prepared by/Date: LSV 10/30/13
Checked by/Date: EFC 10/30/13

Table 2. Smallmouth Bass Fillet Percentages

S-2 (Includes Urban and Dam)	Urban Area			Dams Area		
	Upper Bound	Mid	Lower Bound	Upper Bound	Mid	Lower Bound
MNR	0%	1.9%	5.1%	0.33%	2.3%	4.1%
Recovery	0%	1.9%	5.1%	0.33%	2.3%	4.1%

Notes:
SWAC Area 1 Wide

S-3 (Includes Urban Only)						
	Upper Bound	Mid	Lower Bound	Upper Bound	Mid	Lower Bound
2 Year MNR	0%	1.9%	5.1%	--	--	--
2 Year Step Down (BSAF)	0.1	0.444	LogLinear	--	--	--
Recovery	1.9%	2.5% (power)	5.1%	--	--	--

Notes:
Using SWAC Area 1 (Sections 2,3,4 only)
-- Not calculated

S-4 (Includes Urban Only)						
	Upper Bound	Mid	Lower Bound	Upper Bound	Mid	Lower Bound
2 Year MNR	0%	1.9%	5.1%	--	--	--
4 Year Step Down (BSAF)	0.1	0.444	LogLinear	--	--	--
Recovery	1.9%	2.5% (power)	5.1%	--	--	--

Notes:
Using SWAC Area 1 (Sections 2,3,4 and 3 along the edge)
-- Not calculated

S-5 (Includes Urban and Dam)						
	Upper Bound	Mid	Lower Bound	Upper Bound	Mid	Lower Bound
2 Year MNR	0%	1.9%	5.1%	0.33%	2.3%	4.1%
10 Year Step Down (BSAF)	0.1	0.444	LogLinear	0.1	0.444	LogLinear
Recovery	1.9%	4% (power)	5.1%	2.3%	4% (power)	4.1%

Notes:
SWAC Area 1 Wide
Percentages with no (explanation) calculated from the log-linear regression

Prepared by/Date: LSV 10/30/13
Checked by/Date: EFC 10/30/13

Remediation and Step Down

Remedial activities and the estimated time frame within which these occur are discussed in Section 4.2 of the Area 1 FS. Step down concentrations were calculated via three methods to match the Mid, Upper Bound, and Lower Bound scenarios. A loglinear regression equation was used to calculate the step down for the Mid scenario, a 10 percent ~~sediment to~~ fish to sediment ratio (fish:sediment) was used to calculate the step down for the Upper Bound scenario, and a biota-sediment accumulation factor (BSAF) was used to calculate the step down for the Lower Bound scenario. No change in concentrations is shown during the majority of the time period in which sediment remedial activities occur. The concentration step down due to sediment remediation is shown during the last year of the remedial activity period.

For the ~~Mid~~ Lower Bound scenario, fish concentrations post-remedial activities were calculated based on sediment concentrations pre- and post-remediation, fish concentrations prior to remedial activities, and the regression coefficient provided for each species by Kern (Enclosure 1 of MDEQ comments; MDEQ, 2013) as follows:

$$C_{fish(post)} = C_{fish(pre)} * \left(\frac{C_{sediment\ (post)}}{C_{sediment\ (pre)}}\right)^{\beta_3}$$

Where β_3 = 0.62 for smallmouth bass fillets, β_3 = 0.61 for smallmouth bass young of year whole body, and β_3 = 0.73 for common carp fillets.

For the Upper Bound scenario, a 10 percent fish:sediment ~~to fish~~ ratio, based on Bryant Mill Pond data, was used to calculate the change in fish concentrations. This step down is dependent on the change in sediment concentrations from pre- to post-remedial activities. Post-remediation sediment concentrations decreased by two orders of magnitude from pre-remediation sediment concentrations at Bryant Mill Pond (Enclosure 1 of MDEQ comments; MDEQ, 2013). Post-remediation fish concentrations decreased by one order of magnitude from pre-remediation fish concentrations at Bryant Mill Pond (Enclosure 1 of MDEQ comments; MDEQ, 2013). This results in a ratio of 0.10 (fish:sediment) or 10 percent. The change in fish concentrations was calculated as 10 percent of the difference in pre- and post-remedial activity SWACs for sediment. The SWACs specific to Sections 2, 3 and 4 were used for S-3 and S-4 projection calculations in the Urban Area and the area-wide SWACs were used for S-5 projection calculations for the Urban and Dams Areas.

For the ~~Lower Bound~~Mid scenario, ~~a~~ the BSAFs ~~of 1~~ calculated by CDM for Kalamazoo River fish ~~was~~ were used to calculate the change in fish concentrations. The sitewide average BSAF of 0.444 for smallmouth bass provided on Table 6-3 of the Human Health Risk Assessment (HHRA; CDM, 2003b) was used to calculate the change in smallmouth bass fillet concentrations to represent potential exposure to humans. The sitewide average BSAF of 0.641 for common carp provided on Table 6-4 of the HHRA (CDM, 2003b) was used to calculate the change in common carp fillet concentrations to represent potential exposure to humans. The average fish BSAF of 1 presented on Table 4-8 of the site-wide BERA (CDM, 2003a) was used for smallmouth bass young of year whole body concentrations to represent potential exposure to ecological receptors. The BSAF step down is dependent on the change in sediment concentrations pre- and post-remedial activities. The change in fish concentrations was calculated ~~as 100 percent (1:1)~~ using the appropriate BSAF multiplied by ~~of~~ the difference in pre- and post-remedial activity SWACs for sediment. The SWACs specific to Sections 2, 3, and

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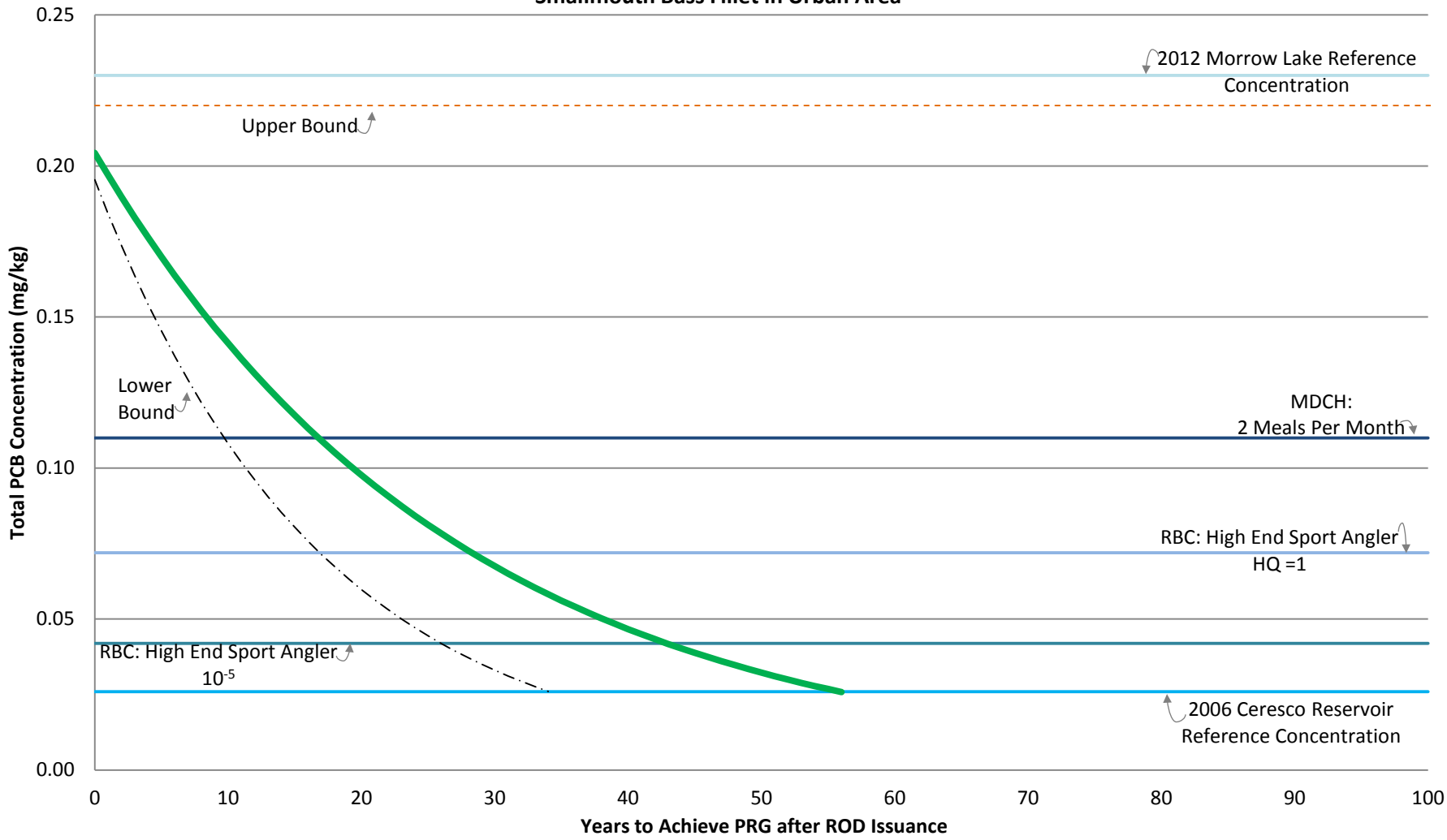
4 were used for S-3 and S-4 projection calculations in the Urban Area and the area-wide SWACs were used for S-5 projection calculations for the Urban and Dams Areas.

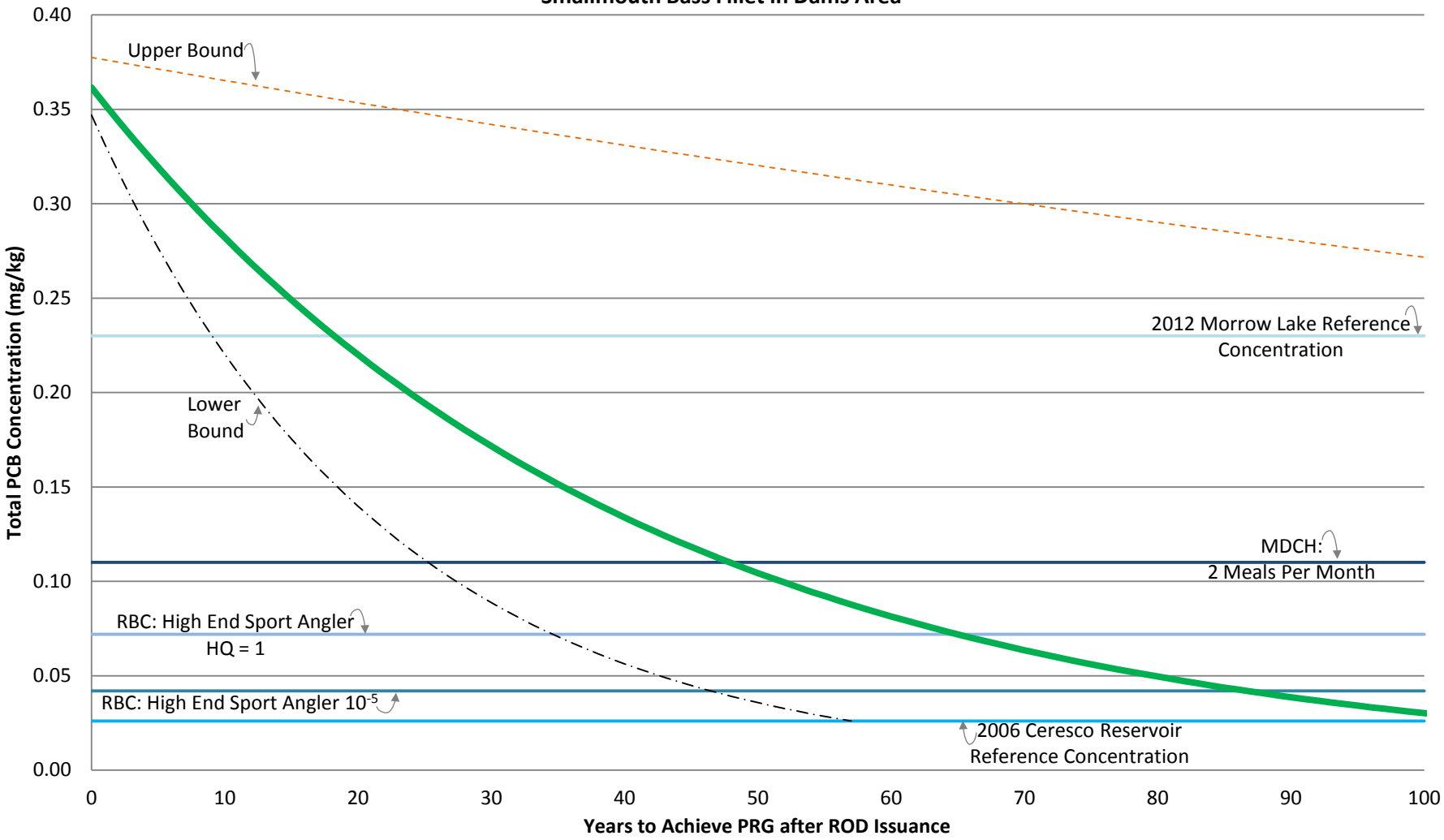
Figure I-1.1a
Fish Tissue Projections for S-2:
Smallmouth Bass Fillet in Urban Area



2012 Morrow Lake Reference Concentration = 0.23 mg/kg
MDCH: 2 Meals Per Month = 0.11 mg/kg
Human Health Fish Consumption RBC: High End Sport Angler (HQ = 1) = 0.072 mg/kg
Human Health Fish Consumption RBC: High End Sport Angler (10^{-4}) = 0.42 mg/kg
Human Health Fish Consumption RBC: High End Sport Angler (10^{-5}) = 0.042 mg/kg
2006 Ceresco Reservoir Reference Concentration = 0.026 mg/kg
Refer to Table I-1.1 for definition of segments

Upper Bound S-2: (MNR)
S-2: (MNR)
Lower Bound S-2: (MNR)

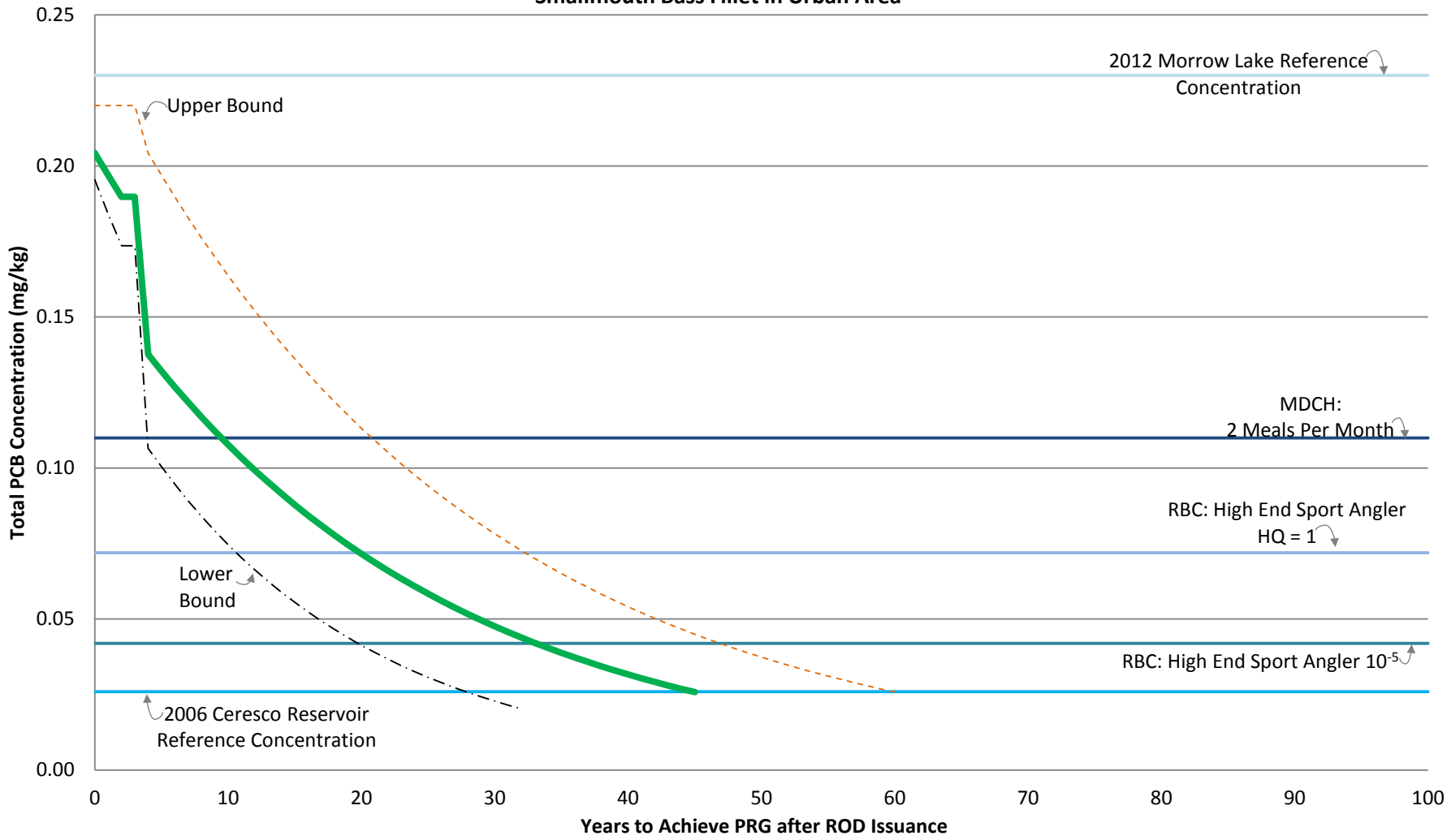
Figure I-1.1b
Fish Tissue Projections for S-2:
Smallmouth Bass Fillet in Dams Area



2012 Morrow Lake Reference Concentration = 0.23 mg/kg
MDCH: 2 Meals Per Month = 0.11 mg/kg
Human Health Fish Consumption RBC: High End Sport Angler (HQ = 1) = 0.072 mg/kg
Human Health Fish Consumption RBC: High End Sport Angler (10^{-4}) = 0.42 mg/kg
Human Health Fish Consumption RBC: High End Sport Angler (10^{-5}) = 0.042 mg/kg
2006 Ceresco Reservoir Reference Concentration = 0.026 mg/kg
Refer to Table I-1.1 for definition of segments

Upper Bound S-2: (MNR)
S-2: (MNR)
Lower Bound S-2: (MNR)

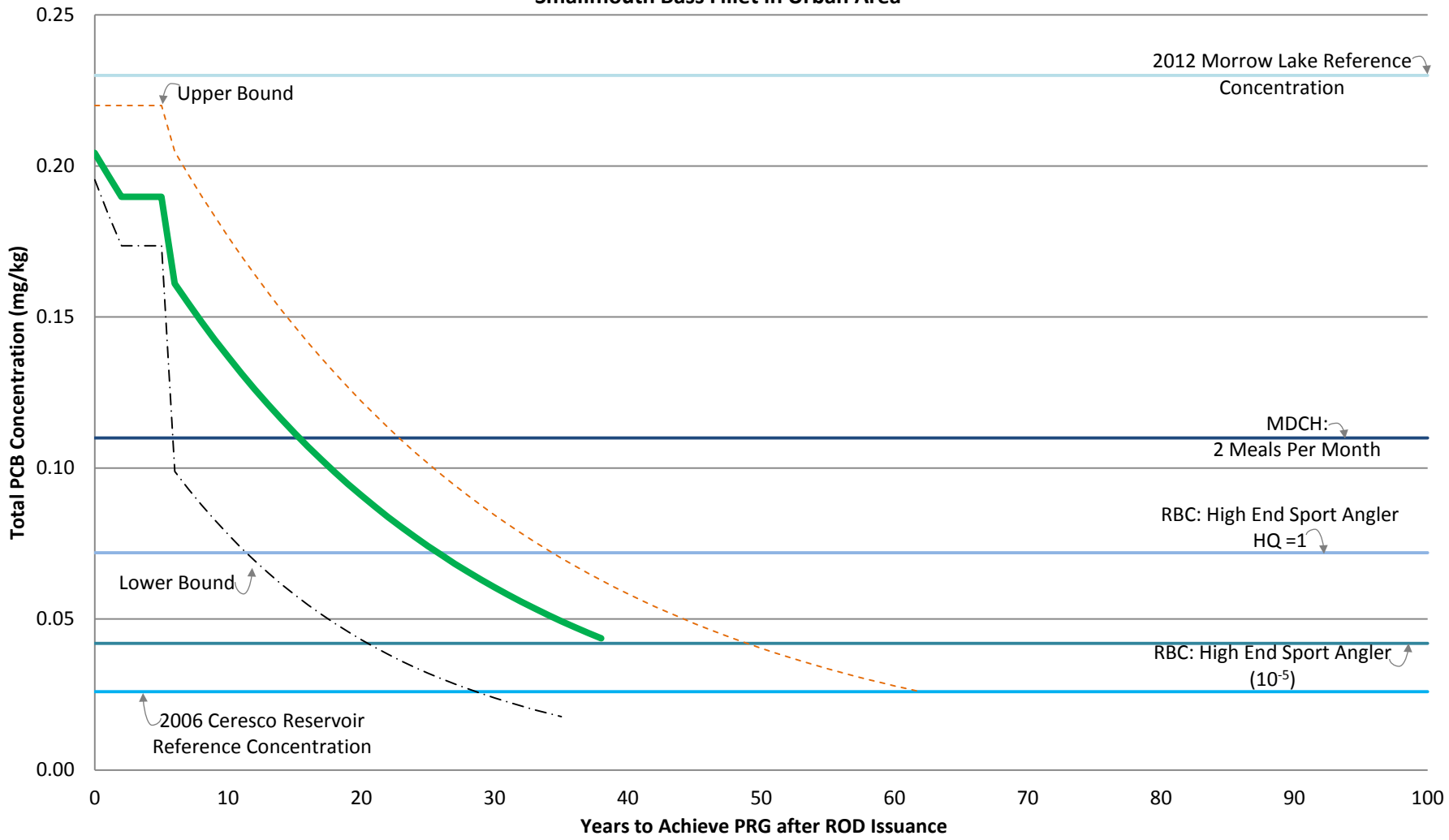
Figure I-1.2a
Fish Tissue Projections for S-3:
Smallmouth Bass Fillet in Urban Area



2012 Morrow Lake Reference Concentration = 0.23 mg/kg
MDCH: 2 Meals Per Month = 0.11 mg/kg
Human Health Fish Consumption RBC: High End Sport Angler (HQ = 1) = 0.072 mg/kg
Human Health Fish Consumption RBC: High End Sport Angler (10^{-4}) = 0.42 mg/kg
Human Health Fish Consumption RBC: High End Sport Angler (10^{-5}) = 0.042 mg/kg
2006 Ceresco Reservoir Reference Concentration = 0.026 mg/kg
Refer to Table I-1.2 for definition of segments

- - - - - Upper Bound S-3: Section 2-4 Hotspots (Upper Bound Step Down)
——— S-3: Section 2-4 Hotspots (Step Down via Log Linear Regression)
—·—·— Lower Bound S-3: Section 2-4 Hotspots (Lower Bound Step Down)

Figure I-1.3a
Fish Tissue Projections for S-4:
Smallmouth Bass Fillet in Urban Area



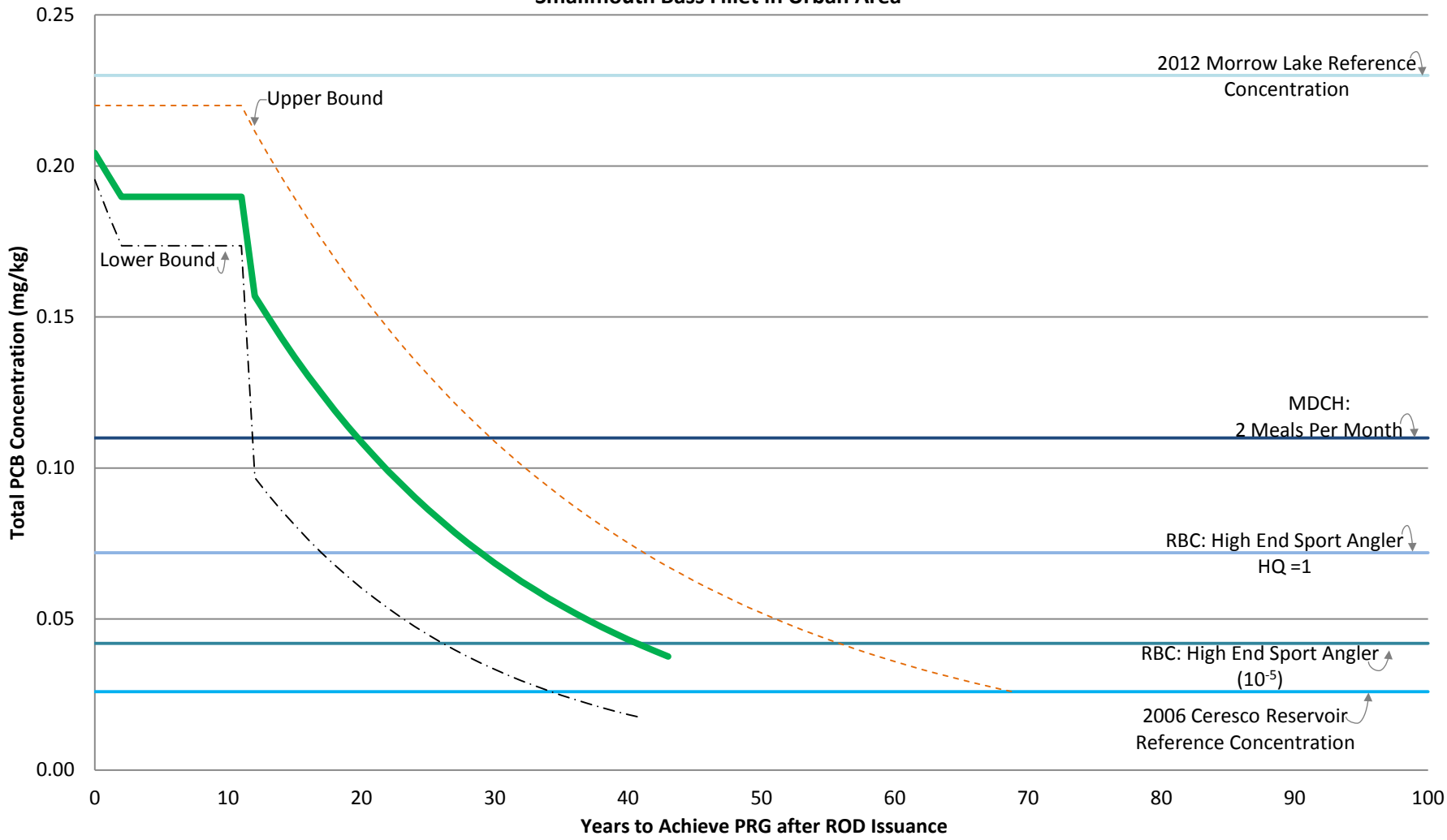
2012 Morrow Lake Reference Concentration = 0.23 mg/kg
MDCH: 2 Meals Per Month = 0.11 mg/kg
Human Health Fish Consumption RBC: High End Sport Angler (HQ = 1) = 0.072 mg/kg
Human Health Fish Consumption RBC: High End Sport Angler (10^{-4}) = 0.42 mg/kg
Human Health Fish Consumption RBC: High End Sport Angler (10^{-5}) = 0.042 mg/kg
2006 Ceresco Reservoir Reference Concentration = 0.026 mg/kg
Refer to Table I-1.3 for definition of segments

- - - - - Upper Bound S-4: Section 2-4 Hotspots and Section 3 Edges (Upper Bound Step Down)

——— S-4: Section 2-4 Hotspots and Section 3 Edges (Step Down via Log Linear Regression)

—·—·— Lower Bound S-4: Section 2-4 Hotspots and Section 3 Edges (Lower Bound Step Down)

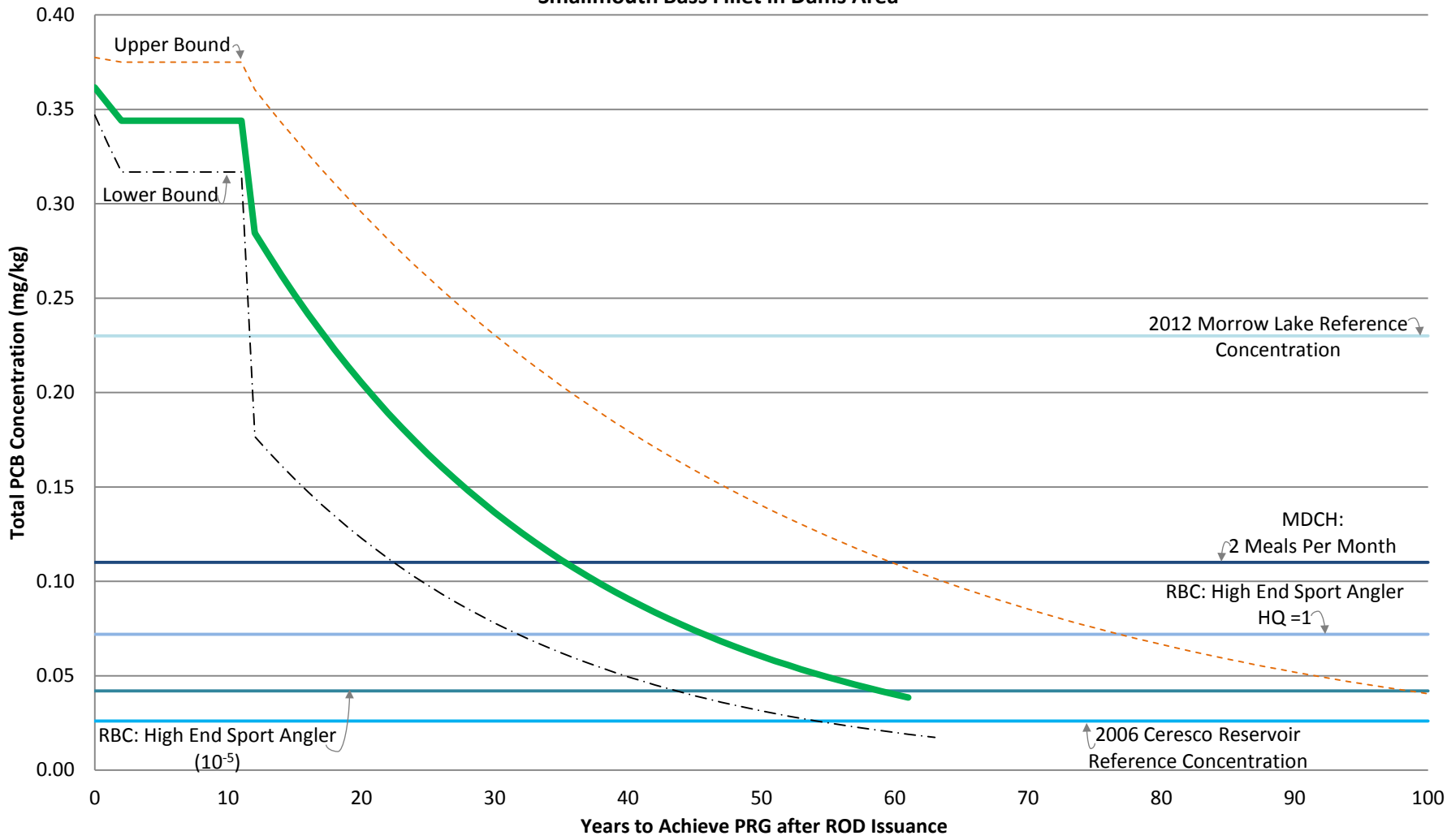
Figure I-1.4a
Fish Tissue Projections for S-5:
Smallmouth Bass Fillet in Urban Area



2012 Morrow Lake Reference Concentration = 0.23 mg/kg
MDCH: 2 Meals Per Month = 0.11 mg/kg
Human Health Fish Consumption RBC: High End Sport Angler (HQ = 1) = 0.072 mg/kg
Human Health Fish Consumption RBC: High End Sport Angler (10^{-4}) = 0.42 mg/kg
Human Health Fish Consumption RBC: High End Sport Angler (10^{-5}) = 0.042 mg/kg
2006 Ceresco Reservoir Reference Concentration = 0.026 mg/kg
Refer to Table I-1.4 for definition of segments

- - - - - Upper Bound S-5: Area-wide Removal (Upper Bound Step Down)
——— S-5: Area-wide Removal (Step Down via Log Linear Regression)
— · — · — Lower Bound S-5: Area-wide Removal (Lower Bound Step Down)

Figure I-1.4b
Fish Tissue Projections for S-5:
Smallmouth Bass Fillet in Dams Area



2012 Morrow Lake Reference Concentration = 0.23 mg/kg
MDCH: 2 Meals Per Month = 0.11 mg/kg
Human Health Fish Consumption RBC: High End Sport Angler (HQ = 1) = 0.072 mg/kg
Human Health Fish Consumption RBC: High End Sport Angler (10^{-4}) = 0.42 mg/kg
Human Health Fish Consumption RBC: High End Sport Angler (10^{-5}) = 0.042 mg/kg
2006 Ceresco Reservoir Reference Concentration = 0.026 mg/kg
Refer to Table I-1.4 for definition of segments

- - - - Upper Bound S-5: Area-wide Removal (Upper Bound Step Down)
——— S-5: Area-wide Removal (Step Down via Log Linear Regression)
—·—·— Lower Bound S-5: Area-wide Removal (Lower Bound Step Down)